

[COMMITTEE PRINT]

JUNE 18, 2007

110TH CONGRESS
1ST SESSION

H. R. _____

To

IN THE HOUSE OF REPRESENTATIVES

M____. _____ introduced the following bill; which was referred to the
Committee on _____

A BILL

To

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. TABLE OF CONTENTS.**

4 The table of contents for this Act is as follows:

Sec. 1. Table of contents.

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1 **TITLE I—SMART GRID AND**
2 **DEMAND RESPONSE**
3 **Subtitle A—Smart Grid**

4 **SEC. 101. STATEMENT OF POLICY ON MODERNIZATION OF**
5 **ELECTRICITY GRID.**

6 (a) SMART GRID CHARACTERISTICS.—It is the policy
7 of the United States to support the modernization of the
8 Nation’s electricity transmission and distribution system
9 to incorporate digital information and controls technology
10 and to share real-time pricing information with electricity
11 customers to achieve each of the following, which together
12 characterize a smart grid:

13 (1) Increased reliability, security and efficiency
14 of the electric grid.

15 (2) Dynamic optimization of grid operations
16 and resources, with full cyber-security.

17 (3) Deployment and integration of distributed
18 resources and generation.

19 (4) Development and incorporation of demand
20 response demand-side resources, and energy effi-
21 ciency resources.

1 (5) Deployment of “smart” technologies for me-
2 tering, communications concerning grid operations
3 and status, and distribution automation.

4 (6) Integration of “smart” appliances and con-
5 sumer devices.

6 (7) Deployment and integration of renewable
7 energy resources, both to the grid and on the cus-
8 tomer side of the electric meter.

9 (8) Deployment and integration of advanced
10 electricity storage and peak-sharing technologies, in-
11 cluding plug-in electric and hybrid electric vehicles,
12 and thermal-storage air conditioning.

13 (9) Provision to consumers of new information
14 and control options.

15 (10) Continual environmental improvement in
16 electricity production and distribution.

17 (11) Enhanced capacity and efficiency of elec-
18 tricity networks, reduction of line losses, and main-
19 tenance of power quality.

20 (b) SUPPORT.—The Secretary of Energy and the
21 Federal Energy Regulatory Commission and other Federal
22 agencies as appropriate shall undertake programs to sup-
23 port the development and demonstration of Smart Grid
24 technologies and standards to maximize the achievement
25 of these goals.

1 (c) BARRIERS.—It is further the policy of the United
2 States that no State, State agency, or local government
3 or instrumentality thereof should prohibit, or erect unrea-
4 sonable barriers to, the deployment of smart grid tech-
5 nologies on an electric utility's distribution facilities, or
6 unreasonably limit the services that may be provided using
7 such technologies.

8 (d) INFORMATION.—It is further the policy of the
9 United States that electricity purchasers are entitled to
10 receive information about the varying value of electricity
11 at different times and places, and that States shall not
12 prohibit nor erect unreasonable barriers to the provision
13 of such information flows to end users.

14 **SEC. 102. GRID MODERNIZATION COMMISSION.**

15 (a) ESTABLISHMENT AND MISSION.—

16 (1) ESTABLISHMENT.—The President shall es-
17 tablish a Grid Modernization Commission composed
18 of 9 members. Three members of the Commission
19 shall be appointed by the President, and one each
20 shall be appointed by the Speaker and Minority
21 Leader of the United States House of Representa-
22 tives and by the Majority Leader and Minority
23 Leader of the United States Senate. Two members
24 shall be appointed by the President from among per-
25 sons recommended by an association representing

1 State utility regulatory commissioners. The Presi-
2 dent shall designate one Commissioner to serve as
3 Chairperson.

4 (2) MISSION.—The mission of the Grid Mod-
5 ernization Commission shall be to facilitate the
6 adoption of Smart Grid standards, technologies, and
7 practices across the Nation’s electricity grid to the
8 point of general adoption and ongoing market sup-
9 port in the United States electric sector. The Com-
10 mission shall be responsible for monitoring develop-
11 ments, encouraging progress toward common stand-
12 ards and protocols, identifying barriers and pro-
13 posing solutions, coordinating with all Federal de-
14 partments and agencies, and coordinating ap-
15 proaches on smart grid implementation with States
16 and local governmental authorities.

17 (b) MEMBERSHIP.—The members appointed to the
18 Commission shall, collectively, have qualifications in elec-
19 tric utility operations and infrastructure, digital informa-
20 tion and control technologies, security, market develop-
21 ment, finance and utility regulation, energy efficiency, de-
22 mand response, renewable energy, and consumer protec-
23 tion.

24 (c) AUTHORITIES TO INTERVENE.—The Commission
25 shall have the authority to intervene and represent itself

1 before the Federal Energy Regulatory Commission and
2 other Federal and State agencies as it deems necessary
3 to accomplish its mission.

4 (d) TERMS OF OFFICE.—The term of office of each
5 Commissioner shall be 5 years, and any member may be
6 reappointed for not more than one additional term of 5
7 years.

8 (e) TERMINATION.—Unless extended by Act of Con-
9 gress, the Commission shall complete its work and cease
10 its activities by January 1, 2020, or on such earlier date
11 that the Commission determines that the proliferation,
12 evolution, and adaptation of Smart Grid technologies no
13 longer require Federal leadership and assistance.

14 (f) COMPENSATION OF MEMBERS.—Each member of
15 the Commission who is not an officer or employee of the
16 Federal Government shall be compensated at a rate equal
17 to the daily equivalent of the annual rate of basic pay pre-
18 scribed for level III of the Executive Schedule under sec-
19 tion 5315 of title 5, United States Code, for each day (in-
20 cluding travel time) during which such member is engaged
21 in the performance of the duties of the Commission. All
22 members of the Commission who are officers or employees
23 of the United States shall serve without compensation in
24 addition to that received for their services as officers or
25 employees of the United States.

1 (g) TRAVEL EXPENSES.—The members of the Com-
2 mission shall be allowed travel expenses, including per
3 diem in lieu of subsistence, at rates authorized for employ-
4 ees of agencies under subchapter I of chapter 57 of title
5 5, United States Code, while away from their homes or
6 regular places of business in the performance of services
7 for the Commission.

8 (h) MEETINGS.—The Commission shall meet at the
9 call of the Chairman. Commission meetings shall be open
10 to the public, but as many as three Commissioners may
11 meet in private without constituting a meeting requiring
12 public access.

13 (i) APPLICABILITY OF FEDERAL ADVISORY COM-
14 MITTEE ACT.—The Federal Advisory Committee Act (5
15 U.S.C. App. 1 et seq.) shall not apply to the Commission.

16 (j) OFFICES AND STAFF.—The Secretary of Energy
17 shall provide the Commission with offices in the Depart-
18 ment of Energy and shall make available to the Commis-
19 sion the expertise and staff resources of both the Office
20 of Electricity Delivery and Energy Reliability and the Of-
21 fice of Energy Efficiency and Renewable Energy.

22 (k) DETAIL OF GOVERNMENT EMPLOYEES.—Any
23 Federal Government employee may be detailed to the
24 Commission without reimbursement, and such detail shall

1 be without interruption or loss of civil service status or
2 privilege.

3 (l) EXECUTIVE DIRECTOR.—The Secretary of En-
4 ergy shall appoint an officer of the Senior Executive Serv-
5 ice to serve as Executive Director to the Commission.

6 (m) PROCUREMENT OF TEMPORARY AND INTERMIT-
7 TENT SERVICES.—The Chairman of the Commission may
8 procure temporary and intermittent services under section
9 3109(b) of title 5, United States Code, at rates for individ-
10 uals which do not exceed the daily equivalent of the annual
11 rate of basic pay prescribed for level V of the Executive
12 Schedule under section 5316 of such title.

13 (n) INFORMATION FROM FEDERAL AGENCIES.—The
14 Commission may secure directly from any Federal depart-
15 ment or agency such information as the Commission con-
16 siders necessary to carry out this Act. Upon request of
17 the Chairman of the Commission, the head of such depart-
18 ment or agency shall furnish such information to the Com-
19 mission. The Commission shall maintain the same level of
20 confidentiality for such information made available under
21 this subsection as is required of the head of the depart-
22 ment or agency from which the information was obtained.

23 (o) POSTAL SERVICES.—The Commission may use
24 the United States mails in the same manner and under

1 the same conditions as other departments and agencies of
2 the Federal Government.

3 **SEC. 103. GRID ASSESSMENT AND REPORT.**

4 (a) IN GENERAL.—The Grid Modernization Commis-
5 sion shall undertake, and update on a biannual basis, an
6 assessment of the progress toward modernizing the elec-
7 tric system from generation to ultimate electricity con-
8 sumption, including implementation of “smart grid” tech-
9 nologies. The Commission shall prepare this assessment
10 with input from stakeholders including but not limited to
11 electric utilities, other Federal offices, States, companies
12 involved in developing related technologies, electricity cus-
13 tomers, and persons with special related expertise. The as-
14 sessment shall include each of the following:

15 (1) An updated inventory of existing smart grid
16 systems.

17 (2) A description of the condition of existing
18 grid infrastructure and procedures for determining
19 the need for new infrastructure;

20 (3) A description of any plans of States, utili-
21 ties, or others to introduce smart grid systems and
22 technologies.

23 (4) An assessment of constraints to deployment
24 of smart grid technology and most important oppor-

1 tunities for doing so, including the readiness or lack
2 thereof of enabling technologies.

3 (5) An assessment of remaining potential bene-
4 fits resulting from introduction of smart grid sys-
5 tems, including benefits related to demand-side effi-
6 ciencies, improved reliability, improved security, re-
7 duced prices, and improved integration of renewable
8 resources.

9 (6) Recommendations for legislative or regu-
10 latory changes to remove barriers to and create in-
11 centives for smart grid system implementation and
12 to meet the policy goals of section 301.

13 (7) An estimate of the potential costs required
14 for modernization of the electricity grid, with speci-
15 ficity relative to geographic areas and components of
16 the grid, together with an assessment of whether the
17 necessary funds would be available to meet such
18 costs, and the sources of such funds.

19 (8) An assessment of ancillary benefits to other
20 economic sectors or activities beyond the electricity
21 sector, such as potential broadband service over
22 power lines.

23 (9) An assessment of technologies, activities or
24 opportunities in energy end use devices, customer
25 premises, buildings, and power generation and stor-

1 age devices that could accelerate or expand the im-
2 pact and effectiveness of smart grid advances.

3 (10) An assessment of potential risks to per-
4 sonal privacy, corporate confidentiality, and grid se-
5 curity from the spread of smart grid technologies,
6 and if so what additional measures and policies are
7 needed to assure privacy and information protection
8 for electric customers and grid partners, and cyber-
9 security protection for extended grid systems.

10 (11) An assessment of the readiness of market
11 forces to drive further implementation and evolution
12 of “smart grid” technologies in the absence of gov-
13 ernment leadership.

14 (12) Recommendations to the Secretary of En-
15 ergy and other Federal officers on actions they
16 should take to assist.

17 The Commission may request electric utilities to provide
18 information relating to deployment and planned deploy-
19 ment of smart grid systems and technologies. At the re-
20 quest of the utility, the Commission shall maintain the
21 confidentiality of utility-specific information. The Commis-
22 sion shall provide opportunities for input and comment by
23 interested persons, including representatives of electricity
24 consumers, Smart Grid technology service providers, the
25 electric utility industry, and State and local government.

1 (b) STATE AND REGIONAL ASSESSMENT AND RE-
2 PORT.—States or groups of States are encouraged to par-
3 ticipate in the development of State or regional specific
4 components of the assessment and report under subsection
5 (a). Such state specific components may address the as-
6 sessment and reporting criteria above but also may include
7 but not be limited to any of the following:

8 (1) Assessment of specific security threats to
9 electricity delivery

10 (2) Energy assurance and response plans to ad-
11 dress security threats.

12 (3) Plans for introduction of smart grid sys-
13 tems and technologies over 3, 5, and 10 year plan-
14 ning horizons.

15 The Commission may make grants to States that begin
16 development of a State or Regional Plan within 180 days
17 of enactment to offset up to one-half of the costs required
18 to develop such plans.

19 (c) SMART GRID REPORT.—Based on its completed
20 initial assessment under subsection (a), the Commission
21 shall submit a report to Congress and the President not
22 later than 2 years after the date of enactment of this sec-
23 tion, and subsequent reports every 2 years thereafter.
24 Each report shall include recommendations to the Presi-
25 dent and to the Congress on actions necessary to mod-

1 ernize the electricity grid. The Commission shall annually
2 update and revise its report and as well as conduct ongoing
3 monitoring and evaluation activities.

4 (d) CONSULTATION AND PUBLIC INPUT.—The Commission shall consult with the Secretary of Energy and
5 the Federal Energy Regulatory Commission on technical
6 issues associated with advanced electricity grid technologies. The Commission shall to the extent feasible provide for broad and frequent input from stakeholders and
7 the general public

8 (e) INTEROPERABILITY PROTOCOLS AND MODEL STANDARDS FOR INFORMATION MANAGEMENT.—

9 (1) IN GENERAL.—The Grid Modernization
10 Commission shall work with Smart Grid stakeholders to lead towards the earliest feasible development of flexible, uniform, and consensus protocols or
11 model standards for information management among
12 and interoperability of smart grid devices and systems. Such protocols and model standards shall
13 allow such devices to communicate and function over
14 multiple technologies, including wireless, cable, satellite, broadband-over-power line, and telephone.
15 Such protocols and model standards should align
16 policy, business, and technology approaches in a way
17 that enables all electric resources, including demand

1 side resources, to contribute to an efficient, reliable
2 electricity network, on an automated basis, as appro-
3 priate.

4 (2) SCOPE OF PROTOCOLS AND MODEL STAND-
5 ARDS .—The protocols and model standards shall
6 accommodate centralized and distributed generation,
7 transmission and distribution resources, including
8 advanced technologies to improve the efficiency and
9 reliability of the electric power transmission and dis-
10 tributions system, renewable generation, energy stor-
11 age, energy efficiency, and demand response and en-
12 abling devices and systems.

13 (3) ESTABLISHMENT OF WORKING GROUP.—
14 Not later than 90 days after the date of enactment
15 of this title, the Commission shall establish a work-
16 ing group comprised of electric industry experts, to
17 be appointed by the Chairman, to assist in devel-
18 oping the protocols and model standards described
19 in this subsection and guide the Federal participa-
20 tion in that process. Members appointed to the
21 working group shall represent the various sectors of
22 the electricity industry, including sectors relating to
23 the generation, transmission, distribution and end-
24 user.

1 (4) DEVELOPMENT OF PROTOCOLS AND MODEL
2 STANDARDS.—In developing the protocols and model
3 standards, the working group shall consult with ex-
4 pert groups such as the Gridwise Architecture Coun-
5 cil, the Institute of Electrical and Electronics Engi-
6 neers, other electric industry groups, customer and
7 manufacturer groups, and any appropriate Federal
8 and State agencies. The proposed protocols and
9 model standards shall be made available in the pub-
10 lic domain, except to the extent they may allow or
11 create threats to grid reliability and security.

12 (5) PROPOSAL FOR PROTOCOLS AND MODEL
13 STANDARDS.—

14 (A) IN GENERAL.—Not later than 1 year
15 after the date of enactment of this title, the
16 working group shall submit to the Commission
17 recommendations concerning development of
18 proposed protocols and model standards and
19 recommendations for Federal support in the im-
20 plementation of such protocols and model
21 standards.

22 (B) REVIEW BY THE COMMISSION.—On re-
23 ceipt of the recommendations under subpara-
24 graph (A), the Commission shall take such ac-
25 tion as necessary to encourage the adoption of

1 the protocols and model standards and their im-
2 plementation.

3 (C) PUBLICATION OF PROTOCOLS AND
4 MODEL STANDARDS.—The Commission shall
5 publish, not later than 3 years after the date of
6 the enactment of this section and every two
7 years thereafter, a report on the status of inter-
8 operability of smart grid technologies, and the
9 availability of protocols and model standards to
10 allow such interoperability.

11 (f) AUTHORIZATION OF APPROPRIATIONS.—There
12 are authorized to be appropriated to carry out the pur-
13 poses of this section the sum of \$25,000,000 for each of
14 the fiscal years 2008 through 2012, and such sums as may
15 be necessary thereafter through fiscal year 2018.

16 **SEC. 104. FEDERAL MATCHING FUND FOR SMART GRID IN-**
17 **VESTMENT COSTS.**

18 (a) MATCHING FUND.—The Secretary of Energy
19 shall establish a Smart Grid Investment Matching Grant
20 Program to provide reimbursement of one-fourth of quali-
21 fying Smart Grid investments.

22 (b) QUALIFYING INVESTMENTS.—Qualifying Smart
23 Grid investments may include any of the following made
24 on or after the date of enactment of this Act:

1 (1) In the case of appliances covered for pur-
2 poses of establishing energy conservation standards
3 under part B of title III of the Energy Policy and
4 Conservation Act of 1975 (42 U.S.C. 6291 and fol-
5 lowing), the documented expenditures incurred by a
6 manufacturer of such appliances associated with
7 purchasing or designing, creating the ability to man-
8 ufacture, and manufacturing and installing for one
9 calendar year, internal devices that allow the appli-
10 ance to engage in Smart Grid functions.

11 (2) In the case of specialized electricity-using
12 equipment, including motors and drivers, installed in
13 industrial or commercial applications, the docu-
14 mented expenditures incurred by its owner or its
15 manufacturer of installing devices or modifying that
16 equipment to engage in Smart Grid functions.

17 (3) In the case of transmission and distribution
18 equipment fitted with monitoring and communica-
19 tions devices to enable smart grid functions, the docu-
20 mented expenditures incurred by the electric utility
21 to purchase and install such monitoring and commu-
22 nications devices.

23 (4) In the case of metering devices, sensors,
24 control devices, and other devices integrated with
25 and attached to an electric utility system that are

1 capable of engaging in Smart Grid functions, the
2 documented expenditures incurred by the electric
3 utility and its customers to purchase and install
4 such devices.

5 (5) In the case of software that enables devices
6 or computers to engage in Smart Grid functions, the
7 documented purchase costs of the software.

8 (6) In the case of entities that operate or co-
9 ordinate operations of regional electric grids, the
10 documented expenditures for purchasing and install-
11 ing such equipment that allows Smart Grid func-
12 tions to operate and be combined or coordinated
13 among multiple electric utilities and between that re-
14 gion and other regions.

15 (7) In the case of persons or entities other than
16 electric utilities owning and operating a distributed
17 electricity generator, the documented expenditures of
18 enabling that generator to be monitored, controlled,
19 or otherwise integrated into grid operations and elec-
20 tricity flows on the grid utilizing Smart Grid func-
21 tions.

22 (8) In the case of electric or hybrid-electric ve-
23 hicles, the documented expenses for devices that
24 allow the vehicle to engage in Smart Grid functions.

1 (9) The documented expenditures related to
2 purchasing and implementing Smart Grid functions
3 in such other cases as the Secretary of Energy shall
4 identify. In making such grants, the Secretary shall
5 seek to reward innovation and early adaptation, even
6 if success is not complete, rather than deployment of
7 proven and commercially viable technologies.

8 (c) INVESTMENTS NOT INCLUDED.—Qualifying
9 Smart Grid investments do not include any of the fol-
10 lowing:

11 (1) Expenditures for electricity generation,
12 transmission, or distribution infrastructure or equip-
13 ment not directly related to enabling Smart Grid
14 functions.

15 (2) After the effective date of a standard under
16 paragraph (21) of section 111(d) of the Public Util-
17 ity Regulatory Policies Act of 1978 (relating to
18 Smart Grid information), an investment that is not
19 in compliance with such standard.

20 (3) After the development and publication by
21 the Commission of protocols and model standards
22 for interoperability of smart grid devices and tech-
23 nologies, an investment that fails to incorporate any
24 of such protocols or model standards.

1 (4) Expenditures for physical interconnection of
2 generators or other devices to the grid except those
3 that are directly related to enabling Smart Grid
4 functions.

5 (5) Expenditures for ongoing salaries, benefits,
6 or personnel costs not incurred in the initial installa-
7 tion, training, or start up of smart grid functions.

8 (6) Expenditures for travel, lodging, meals or
9 other personal costs.

10 (7) Ongoing or routine operation, billing, cus-
11 tomer relations, security, and maintenance expendi-
12 tures.

13 (8) Such other expenditures that the Secretary
14 of Energy determines not to be Qualifying Smart
15 Grid Investments by reason of the lack of the ability
16 to perform smart grid functions or lack of direct re-
17 lationship to smart grid functions.

18 (d) SMART GRID FUNCTIONS.—The term “smart
19 grid functions” means any of the following:

20 (1) The ability to develop, store, send and re-
21 ceive digital information concerning electricity use,
22 costs, prices, time of use, nature of use, storage, or
23 other information relevant to device, grid, or utility
24 operations, to or from or by means of the electric

1 utility system, through one or a combination of de-
2 vices and technologies.

3 (2) The ability to develop, store, send and re-
4 ceive digital information concerning electricity use,
5 costs, prices, time or use, nature of use, storage, or
6 other information relevant to device, grid, or utility
7 operations to or from a computer or other control
8 device.

9 (3) The ability to measure or monitor electricity
10 use as a function of time of day, power quality char-
11 acteristics such as voltage level, current, cycles per
12 second, or source or type of generation and to store,
13 synthesize or report that information by digital
14 means.

15 (4) The ability to sense and localize disruptions
16 or changes in power flows on the grid and commu-
17 nicate such information instantaneously and auto-
18 matically for purposes of enabling automatic protec-
19 tive responses to sustain reliability and security of
20 grid operations.

21 (5) The ability to detect, prevent, communicate
22 with regard to, respond to, or recover from system
23 security threats, including cyber-security threats and
24 terrorism, using digital information, media, and de-
25 vices.

1 (6) The ability of any appliance or machine to
2 respond to such signals, measurements, or commu-
3 nications automatically or in a manner programmed
4 by its owner or operator without independent human
5 intervention.

6 (7) The ability to use digital information to op-
7 erate functionalities on the electric utility grid that
8 were previously electro-mechanical or manual.

9 (8) The ability to use digital controls to manage
10 and modify electricity demand, enable congestion
11 management, assist in voltage control, provide oper-
12 ating reserves, and provide frequency regulation.

13 (9) Such other functions as the Secretary of
14 Energy may identify as being necessary or useful to
15 the operation of a Smart Grid.

16 (e) OFFICE.—The Secretary of Energy shall—

17 (1) establish an Office to administer the Smart
18 Grid Investment Grant Program, assuring that ex-
19 pert resources from the Commission on Grid Mod-
20 ernization, the Office of Energy Distribution and
21 Electricity Reliability, and the Office of Energy Effi-
22 ciency and Renewable Energy are fully available to
23 advise on its administration and actions;

24 (2) appoint a Senior Executive Service officer
25 to direct the Office, together with such personnel as

1 are required to administer the Smart Grid Invest-
2 ment Grant program;

3 (3) establish and publish in the Federal Reg-
4 ister, within 180 days after the enactment of this
5 section, procedures by which applicants who have
6 made qualifying Smart Grid investments can seek
7 and obtain reimbursement of one-fourth of their doc-
8 umented expenditures;

9 (4) establish procedures to assure that there is
10 no duplication or multiple reimbursement for the
11 same investment or costs, that the reimbursement
12 goes to the party making the actual expenditures for
13 Qualifying Smart Grid Investments, and that the
14 grants made have significant effect in encouraging
15 and facilitating the development of a smart grid.;

16 (5) maintain public records of reimbursements
17 made, recipients, and qualifying Smart Grid invest-
18 ments which have received reimbursements;

19 (6) establish procedures to provide, in cases
20 deemed by the Secretary to be warranted, advance
21 payment of moneys up to the full amount of the pro-
22 jected eventual reimbursement, to creditworthy ap-
23 plicants whose ability to make Qualifying Smart
24 Grid Investments may be hindered by lack of initial
25 capital, in lieu of any later reimbursement for which

1 that applicant qualifies, and subject to full return of
2 the advance payment in the event that the Quali-
3 fying Smart Grid investment is not made;

4 (7) establish procedures to provide, in the event
5 appropriated moneys in any year are insufficient to
6 provide reimbursements for qualifying Smart Grid
7 investments, that such reimbursement would be
8 made in the next fiscal year or whenever funds are
9 again sufficient, with the condition that the insuffi-
10 ciency of funds to reimburse Qualifying Smart Grid
11 Investments from moneys appropriated for that pur-
12 pose does not create a Federal obligation to that ap-
13 plicant; and

14 (8) have and exercise the discretion to deny
15 grants for investments that do not qualify in the
16 reasonable judgement of the Secretary.

17 (f) AUTHORIZATION OF APPROPRIATIONS.—There
18 are authorized to be appropriated to the Secretary of En-
19 ergy the sums of—

20 (1) \$10,000,000 for each of fiscal years 2008
21 through 2012 to provide for administration of the
22 Smart Grid Investment Matching Fund; and

23 (2) \$250,000,000 for fiscal year 2008 and
24 \$500,000,000 for each of fiscal years 2009 through

1 2012 to provide reimbursements of one-fourth of
2 Qualifying Smart Grid Investments.

3 **SEC. 105. SMART GRID TECHNOLOGY DEPLOYMENT.**

4 (a) POWER GRID DIGITAL INFORMATION TECH-
5 NOLOGY.—The Secretary of Energy shall conduct pro-
6 grams to—

7 (1) deploy advanced techniques for measuring
8 peak load reductions and energy efficiency savings
9 on customer premises from smart metering, demand
10 response, distributed generation and electricity stor-
11 age systems;

12 (2) implement means for demand response, dis-
13 tributed generation, and storage to provide ancillary
14 services;

15 (3) advance the use of wide-area measurement
16 networks including data mining, visualization, ad-
17 vanced computing, and secure and dependable com-
18 munications in a highly distributed environment; and

19 (4) implement reliability technologies in a grid
20 control room environment against a representative
21 set of local outage and wide area blackout scenarios.

22 (b) SMART GRID REGIONAL DEMONSTRATION PRO-
23 GRAM.—

24 (1) ESTABLISHMENT OF PROGRAM.—The Sec-
25 retary of Energy shall establish a program of dem-

1 onstration projects specifically focused on advanced
2 technologies for power grid sensing, communications,
3 analysis, and power flow control, including the inte-
4 gration of demand-side resources into grid manage-
5 ment. The goals of this program shall be to—

6 (A) demonstrate the potential benefits of
7 concentrated investments in advanced grid tech-
8 nologies on a regional grid;

9 (B) facilitate the commercial transition
10 from the current power transmission and dis-
11 tribution system technologies to advanced tech-
12 nologies; and

13 (C) facilitate the integration of advanced
14 technologies in existing electric networks to im-
15 prove system performance, power flow control
16 and reliability.

17 (2) DEMONSTRATION PROJECTS.—The Sec-
18 retary shall establish Smart Grid demonstration
19 projects for not more than 5 electric utility systems
20 of various types and sizes under this subsection.
21 Such demonstration projects shall be undertaken in
22 cooperation with the electric utility. Under such
23 demonstration projects, financial assistance shall be
24 available to cover not more than one-half of the
25 qualifying Smart Grid technology investments made

1 by the electric utility. Any project receiving financial
2 assistance under this section shall not be eligible to
3 receive financial assistance (including loan guaran-
4 tees) under any other Federal program.

5 (c) AUTHORIZATION.—

6 (1) POWER GRID DIGITAL INFORMATION TECH-
7 NOLOGY PROGRAMS.—There are authorized to be ap-
8 propriated to carry out subsection (a) such sums as
9 are necessary for each of the fiscal years 2008
10 through 2012.

11 (2) SMART GRID REGIONAL DEMONSTRATION
12 PROGRAM.—There is authorized to be appropriated
13 to carry out subsection (b) \$20,000,000 for each of
14 the fiscal years 2008 through 2012.

15 **SEC. 106. SMART GRID INFORMATION REQUIREMENTS.**

16 (a) FINDINGS.—Congress finds that Smart Grid
17 technologies will require, for their optimum use by elec-
18 tricity consumers, that such consumers have access to crit-
19 ical information in possession of their utilities or elec-
20 tricity suppliers, in order to assist the customers in opti-
21 mizing their electricity use and limiting the associated en-
22 vironmental impacts.

23 (b) DEVELOPMENT OF RULES.—The Commission on
24 Grid Modernization shall within one year of its initial
25 meeting develop and declare a standard for the collection,

1 presentation and delivery of information to electricity pur-
2 chasers as required by the standard under section
3 111(d)(21) of the Public Utility Regulatory Policies Act
4 of 1978. Such standard shall provide purchasers with dif-
5 ferent access options for such information. Such standard
6 shall be developed with input from the Secretary of En-
7 ergy, the Federal Energy Regulatory Commission, the Ad-
8 ministrator of the Environmental Protection Agency,
9 States, and stakeholders representing, but not limited to,
10 electric utilities, energy efficiency and demand response
11 experts, environmental organizations and consumer orga-
12 nizations.

13 (c) APPLICATION OF SMART GRID INFORMATION
14 STANDARD TO FEDERAL ENTITIES AND WHOLESALE
15 MARKETS.—Within 60 days of the declaration of the
16 standard under subsection (b), the Federal Energy Regu-
17 latory Commission shall require all public utilities, with
18 respect to federally jurisdictional sales and transmission
19 of electricity, and all approved regional transmission orga-
20 nizations subject to its jurisdiction, to implement the
21 Smart Grid information standard developed pursuant to
22 this section. The Tennessee Valley Authority, Bonneville
23 Power Administration, and Federal power administrations
24 shall, within 180 days of the declaration of the standard,
25 adopt it for their own sales or transmission of electricity.

1 **SEC. 107. STATE CONSIDERATION OF INCENTIVES FOR**
2 **SMART GRID.**

3 (a) CONSIDERATION OF ADDITIONAL STANDARDS.—
4 Section 111(d) of the Public Utility Regulatory Policies
5 Act (16 U.S.C. 2621(d)) is amended by adding at the end:

6 “(18) UTILITY INVESTMENT IN SMART GRID IN-
7 VESTMENTS.—Each electric utility shall prior to un-
8 dertaking investments in non-advanced grid tech-
9 nologies demonstrate that alternative investments in
10 advanced grid technologies have been considered, in-
11 cluding from a standpoint of cost-effectiveness,
12 where such cost-effectiveness considers costs and
13 benefits on a life-cycle basis.

14 “(19) UTILITY COST OF SMART GRID INVEST-
15 MENTS.—Each electric utility shall be permitted
16 to—

17 “(A) recover from ratepayers the capital
18 and operating expenditures and other costs of
19 the utility for qualified smart grid system, in-
20 cluding a reasonable rate of return on the cap-
21 ital expenditures of the utility for a qualified
22 smart grid system, and

23 “(B) recover in a timely manner the re-
24 maining book-value costs of equipment rendered
25 obsolete by the deployment of a qualified smart

1 grid system, based on the remaining depreciable
2 life of the obsolete equipment.

3 “(20) RATE DESIGN MODIFICATIONS TO PRO-
4 MOTE ENERGY EFFICIENCY INVESTMENTS.—

5 “(A) IN GENERAL.—The rates allowed to
6 be charged by any electric utility shall—

7 “(i) align utility incentives with the
8 delivery of cost-effective energy efficiency;
9 and

10 “(ii) promote energy efficiency invest-
11 ments.

12 “(B) POLICY OPTIONS.—In complying with
13 subparagraph (A), each State regulatory au-
14 thority and each nonregulated utility shall con-
15 sider—

16 “(i) removing the throughput incen-
17 tive and other regulatory and management
18 disincentives to energy efficiency;

19 “(ii) providing utility incentives for
20 the successful management of energy effi-
21 ciency programs;

22 “(iii) including the impact on adoption
23 of energy efficiency as 1 of the goals of re-
24 tail rate design, recognizing that energy ef-

1 efficiency must be balanced with other objec-
2 tives;

3 “(iv) adopting rate designs that en-
4 courage energy efficiency for each cus-
5 tomer class; and

6 “(v) allowing timely recovery of en-
7 ergy efficiency-related costs.

8 “(21) SMART GRID INFORMATION.—

9 “(A) STANDARD.—All electricity pur-
10 chasers shall be provided direct access, both in
11 written and electronic machine-readable form,
12 to information from their electricity provider
13 about their time-based use, price, and source of
14 the electricity delivered to them, together with
15 any available optional electricity supplies and
16 their prices and sources. Such information shall
17 be offered in not less than hourly intervals and
18 available on not less than a daily basis.

19 “(B) INFORMATION.—Information pro-
20 vided under this section shall conform to the
21 standardized rules issued by the Commission on
22 Grid Modernization under section 307(b) of the
23 [SHORT TITLE Act of 2007] and shall in-
24 clude:

1 “(i) PRICES.—Purchasers and other
2 interested persons shall be provided with
3 information on:

4 “(I) Time-based electricity prices
5 in the wholesale electricity market;
6 and

7 “(II) Time-based electricity retail
8 prices or rates that are available to
9 the purchasers.

10 “(ii) USAGE.—Purchasers shall be
11 provided with the number of electricity
12 units, expressed in kwh, purchased by
13 them

14 “(iii) SOURCES.—Purchasers and
15 other interested person shall be provided
16 with information on the sources of the
17 power provided by the utility by type of
18 generation, including greenhouse gas emis-
19 sions and criteria pollutants associated
20 each type of generation, during the re-
21 ported electricity consumption periods.

22 “(iv) INTERVALS AND PROJEC-
23 TIONS.—Updates shall be offered on not
24 less than a daily basis, shall include hourly
25 price and source information, and shall in-

1 clude a day-ahead projection of such infor-
2 mation.

3 “(C) ACCESS.—Purchasers shall be able to
4 access their own information at any time
5 through the internet and on other means of
6 communication elected by that utility for Smart
7 Grid applications. Other interested persons
8 shall be able to access information not specific
9 to any purchaser through the Internet. Infor-
10 mation specific to any purchaser shall be pro-
11 vided solely to that purchaser.”.

12 (b) RECONSIDERATION OF CERTAIN STANDARDS.—
13 Section 112 of the Public Utility Regulatory Policies Act
14 of 1978 (16 U.S.C. 2622) is amended by adding the fol-
15 lowing at the end thereof:

16 “(g) RECONSIDERATION OF PRIOR TIME-OF-DAY
17 AND COMMUNICATION STANDARDS.—Not later than 1
18 year after the enactment of this paragraph, each State
19 regulatory authority (with respect to each electric utility
20 for which it has ratemaking authority) and each nonregu-
21 lated utility shall commence a reconsideration under sec-
22 tion 111, or set a hearing date for reconsideration, with
23 respect to the standards established by paragraphs (3)
24 and (14) of section 111(d) to take into account Smart
25 Grid technologies. Not later than 2 years after the date

1 of the enactment of the this paragraph, each State regu-
2 latory authority (with respect to each electric utility for
3 which it has ratemaking authority), and each nonregulated
4 electric utility, shall complete the reconsideration, and
5 shall make the determination, referred to in section 111
6 with respect to the standards established by paragraphs
7 (3) and (14) of section 111(d).”.

8 (c) COMPLIANCE.—

9 (1) TIME LIMITATIONS.—Section 112(b) of the
10 Public Utility Regulatory Policies Act of 1978 (16
11 U.S.C. 2622(b)) is amended by adding the following
12 at the end thereof:

13 “(6)(A) Not later than 1 year after the enact-
14 ment of this paragraph, each State regulatory au-
15 thority (with respect to each electric utility for which
16 it has ratemaking authority) and each nonregulated
17 utility shall commence the consideration referred to
18 in section 111, or set a hearing date for consider-
19 ation, with respect to the standards established by
20 paragraphs (18) through (20) of section 111(d). Not
21 later than 6 months after the promulgation of rules
22 by the Commission on Grid Modernization under
23 section 306(b) of the [SHORT TITLE Act of
24 2007], each State regulatory authority (with respect
25 to each electric utility for which it has ratemaking

1 authority) and each nonregulated utility shall com-
2 mence the consideration referred to in section 111,
3 or set a hearing date for consideration, with respect
4 to the standard established by paragraph (21) of
5 section 111(d).

6 “(B) Not later than two years after the date of
7 the enactment of the this paragraph, each State reg-
8 ulatory authority (with respect to each electric utility
9 for which it has ratemaking authority), and each
10 nonregulated electric utility, shall complete the con-
11 sideration, and shall make the determination, re-
12 ferred to in section 111 with respect to each stand-
13 ard established by paragraphs (18) through (20) of
14 section 111(d). Not later than 18 months after the
15 promulgation of rules by the Commission on Grid
16 Modernization under section 306(b) of the [SHORT
17 TITLE Act of 2007] each State regulatory authority
18 (with respect to each electric utility for which it has
19 ratemaking authority), and each nonregulated elec-
20 tric utility, shall complete the consideration, and
21 shall make the determination, referred to in section
22 111 with respect to each standard established by
23 paragraph (21) of section 111(d).”.

24 (2) FAILURE TO COMPLY.—Section 112(c) of
25 such Act is amended by adding the following at the

1 end: “ In the case of the standards established by
2 paragraphs (18) through (21) of section 111(d), the
3 reference contained in this subsection to the date of
4 enactment of this Act shall be deemed to be a ref-
5 erence to the date of enactment of such para-
6 graphs.”

7 (3) PRIOR STATE ACTIONS.—Section 112(d) of
8 such Act is amended by inserting “and paragraphs
9 (18) through (20)” before “of such 111(d)” .

10 **SEC. 108. DOE STUDY OF SECURITY ATTRIBUTES OF SMART**
11 **GRID SYSTEMS.**

12 (a) DOE STUDY.—The Secretary of Energy shall,
13 within 6 months after the Grid Modernization Commission
14 completes its first biennial assessment and report under
15 section 302 of the [SHORT TITLE Act of 2007], submit
16 a report to Congress that provides a quantitative assess-
17 ment and determination of the existing and potential im-
18 pacts of the deployment of Smart Grid systems on improv-
19 ing the security of the Nation’s electricity infrastructure
20 and operating capability. The report shall include but not
21 be limited to specific recommendations on each of the fol-
22 lowing:

23 (1) How smart grid systems can help in making
24 the Nation’s electricity system less vulnerable to dis-
25 ruptions due to intentional acts against the system.

1 (2) How smart grid systems can help in restor-
2 ing the integrity of the Nation's electricity system
3 subsequent to disruptions.

4 (3) How smart grid systems can facilitate emer-
5 gency communications and control of the Nation's
6 electricity system during times of localized or nation-
7 wide emergency.

8 (b) CONSULTATION.—The Secretary shall consult
9 with other Federal agencies in the development of the re-
10 port under this section, including but not limited to the
11 Secretary of Homeland Security, the Federal Energy Reg-
12 ulatory Commission and the Electric Reliability Organiza-
13 tion certified by the Commission under section 215(c) of
14 the Federal Power Act (16 U.S.C. 824 o) as added by
15 section 1211 of the Energy Policy Act of 2005 (P.L. 109-
16 58; 119 Stat.941)

17 (c) FUNDING.—The Secretary shall fund demonstra-
18 tion projects for the purpose of demonstrating the findings
19 of the report under this section. Not more than
20 \$10,000,000 are authorized to be appropriated for such
21 projects.

22 **Subtitle B—Demand Response**

23 **SEC. 111. ELECTRICITY SECTOR DEMAND RESPONSE.**

24 (a) AMENDMENT OF NECPA.—Title V of the Na-
25 tional Energy Conservation Policy Act (42 U.S.C. 8201

1 and following) is amended by adding the following new
2 part at the end thereof:

3 **“PART 5—PEAK DEMAND REDUCTION**

4 **“SEC. 571. DEFINITIONS.**

5 “(a) SECRETARY.—As used in this part, the term
6 ‘Secretary’ means the Secretary of Energy.

7 “(b) FEDERAL AGENCY.—As used in this part, the
8 term ‘Federal agency’ has the same meaning as provided
9 by section 551 of this Act.

10 **“SEC. 572. FEDERAL ELECTRICITY PEAK DEMAND REDUC-**
11 **TION STANDARD.**

12 “(a) 2008 AGENCY ANNUAL ENERGY PLAN.—Each
13 Federal agency shall prepare, and include in its annual
14 report under section 548(a) of this Act, each of the fol-
15 lowing:

16 “(1) A determination of the agency’s aggregate
17 electricity demand during the system peak hours for
18 the utilities providing electricity service to its facili-
19 ties during 2006 and 2007.

20 “(2) A forecast for each year through 2018 of
21 the projected growth in such peak demand in light
22 of projected growth of facilities, staff, activities, elec-
23 tric intensity of activities, and other relevant factors.

24 “(b) FEDERAL ELECTRICITY PEAK DEMAND REDUC-
25 TION STANDARD.—

1 “(1) IN GENERAL.—Except as provided in para-
 2 graph (2), for calendar year 2009 and each calendar
 3 year thereafter, each Federal agency shall reduce its
 4 aggregate peak electricity demand or make such
 5 amounts of electricity demand available in the form
 6 of demand response, by the percentage amount spec-
 7 ified in the Federal Electricity Peak Demand Reduc-
 8 tion Standard set forth in the following table:

“Federal Electricity Peak Demand Reduction Standard

Calendar Year	Reduction of Peak Demand Forecast
2009	2 percent of the peak demand forecast for calendar year 2009
2010	4 percent of the peak demand forecast for calendar year 2010
2011	6 percent of the peak demand forecast for calendar year 2011
2012	8 percent of the peak demand forecast for calendar year 2012
2013	10 percent of the peak demand forecast for calendar year 2013
2014	12 percent of the peak demand forecast for calendar year 2014
2015	14 percent of the peak demand forecast for calendar year 2015
2016	16 percent of the peak demand forecast for calendar year 2016
2017	18 percent of the peak demand forecast for calendar year 2017
2018 and each calendar year thereafter.	20 percent of the peak demand forecast for the applicable calendar year

9 In the table above, the term ‘forecast’ refers to the fore-
 10 cast set forth in the 2008 report under section 548(a) of
 11 this Act as updated in accordance with subsection in
 12 (c)(1)(C).

13 “(2) EXCEPTION.—The standard shall not
 14 apply to any activity of a Federal agency relating to

1 defense or national security if compliance with the
2 standard would have an adverse mission impact on
3 the activity, as determined by the Secretary of De-
4 fense or the Secretary of Homeland Security.

5 “(c) IMPLEMENTATION OF STANDARD.—

6 “(1) IN GENERAL.—Not later than January 1,
7 2010, and each calendar year thereafter, each Fed-
8 eral agency shall include in the annual energy plan
9 of the Federal agency each of the following:

10 “(A) An assessment of whether the Fed-
11 eral agency was in compliance with the stand-
12 ard established in subsection (b) for the pre-
13 ceding year.

14 “(B) A description of—

15 “(i) the method by which the Federal
16 agency proposes to comply with the stand-
17 ard for the following calendar year; and

18 “(ii) the factors relied on by the head
19 of the Federal agency in determining
20 whether to participate in demand response
21 programs offered by an electric utility or
22 others during the preceding calendar year;
23 and

24 “(iii) if the Federal agency did not
25 participate in a demand response program

1 offered by each utility providing electric
2 service to facilities of the agency during
3 the preceding calendar year, an expla-
4 nation for the decision by the head of the
5 Federal agency to not participate.

6 “(C) An update of the agency’s prior fore-
7 cast for the remaining years in the period until
8 2018.

9 “(2) AVAILABILITY TO PUBLIC.—Not later than
10 January 1, 2010, and each calendar year thereafter,
11 the head of each Federal agency shall make available
12 to the public a description of each provision included
13 in the annual energy plan of the Federal agency de-
14 scribed in subparagraphs (A) through (C) of para-
15 graph (1).

16 “(d) MODIFICATIONS TO FEDERAL ENERGY MAN-
17 AGEMENT PROGRAM.—The Secretary shall make any
18 modification to the Federal Energy Management Program
19 of the Department of Energy that the Secretary deter-
20 mines to be necessary to

21 “(1) incorporate the standard established under
22 subsection (a) into the Federal Energy Management
23 Program;

24 “(2) assist any Federal agency to comply with
25 the standard established under subsection (b)

1 through any appropriate means, including con-
2 ducting 1 or more demonstration projects at Federal
3 facilities.

4 “(e) ANNUAL REPORT.—Not later than March 1,
5 2010, and annually thereafter, the Secretary shall submit
6 to Congress a report that evaluates the success of agencies
7 in meeting the standard established under subsection (a)
8 and the success of the Federal Energy Management Pro-
9 gram in assisting agencies with meeting the standard, and
10 the costs and benefits of such participation.

11 **“SEC. 573. NATIONAL ACTION PLAN FOR DEMAND RE-**
12 **SPONSE.**

13 “(a) NATIONAL ASSESSMENT AND REPORT.—The
14 Grid Modernization Commission established under subtitle
15 A of title III of the [SHORT TITLE Act of 2007] shall
16 conduct a National Assessment of Demand Response. The
17 Commission shall, within 18 months of the date on which
18 the full Commission first meets, submit a Report to Con-
19 gress that includes each of the following:

20 “(1) Estimation of nationwide demand response
21 potential in 5 and 10 year horizons, including data
22 on a State-by-State basis, and a methodology for up-
23 dates of such estimates on an annual basis.

24 “(2) Estimation of how much of this potential
25 can be achieved within 5 and 10 years after the en-

1 actment of this Act accompanied by specific policy
2 recommendations that if implemented can achieve
3 the estimated potential. Such recommendations shall
4 include options for funding and/or incentives for the
5 development of demand response resources. The
6 Commission shall seek to take advantage of pre-
7 existing research and ongoing work, and shall as-
8 sume that there is no duplication of effort

9 “(b) NATIONAL ACTION PLAN ON DEMAND RE-
10 SPONSE.—The Grid Modernization Commission shall fur-
11 ther develop and implement a National Action Plan on De-
12 mand Response. Such Plan shall be completed within one
13 year after the completion of the National Assessment of
14 Demand Response, and shall meet each of the following
15 objectives:

16 “(1) Provision of adequate technical assistance
17 to States to allow them to maximize the amount of
18 demand response resources that can be developed
19 and deployed.

20 “(2) Implementation of a national communica-
21 tions program that includes broad-based customer
22 education and support.

23 “(3) Development and dissemination of tools,
24 information and other support mechanisms for use

1 by customers, states, utilities and demand response
2 providers.

3 “(c) AUTHORIZATION.—There are authorized to be
4 appropriated to carry out this section not more than
5 \$10,000,000 for each of the fiscal years 2008 and 2009
6 and \$20,000,000 for each of the fiscal years 2010 through
7 2020.

8 **“SEC. 574. REPORT ON ENVIRONMENTAL ATTRIBUTES AND**
9 **IMPACTS OF DEMAND RESPONSE AND SMART**
10 **GRID SYSTEMS.**

11 “(a) REPORT.—The Administrator of the Environ-
12 mental Protection Agency shall, within 6 months after
13 completion of the National Assessment of Demand Re-
14 sponse required by section 573 submit a report to Con-
15 gress that addresses each of the following:

16 “(1) A quantitative assessment and determina-
17 tion of the existing and potential impacts of demand
18 response and ‘smart grid’ systems on air emissions
19 and air quality, including but not limited to carbon
20 dioxide, oxides of nitrogen and oxides of sulfur.

21 “(2) An assessment and determination of the
22 existing and potential impacts of demand response
23 and ‘smart grid’ systems on environmental param-
24 eters other than emissions and air quality, including
25 but not limited to:

1 “(A) Land use.

2 “(B) Water use.

3 “(C) Use of renewable energy.

4 “(D) Effect on energy sources other than
5 electricity.

6 “(3) A detailed plan for how Energy Efficiency
7 and Clean Energy programs administered by the
8 Agency, including the Energy Star Program, will in-
9 corporate and encourage end-use efficiency, demand
10 response and ‘smart grid’ systems and technologies,
11 including but not limited to each of the following:

12 “(A) Requirements that appliances and
13 other equipment are capable of manually and
14 automatically receiving and acting upon pricing
15 and control information and or instructions pro-
16 vided by the customer, a load serving entity or
17 a third-party designated by the customer.

18 “(B) Requirements for time-based valu-
19 ation of kilowatt hour reductions in planning
20 and evaluation of energy efficiency programs.

21 “(C) Education and communication, in-
22 cluding to state energy officials and state regu-
23 lators, that build awareness of demand response
24 and smart grid systems and technologies and

1 their existing and potential relationship to such
2 Agency programs.

3 “(b) FUNDING.—There are authorized to be appro-
4 priated to carry out this section for fiscal year 2010, to
5 remain available until expended.”.

6 (b) TABLE OF CONTENTS.—The table of contents for
7 such Act is amended by adding the following after the
8 items relating to part 4 of title V:

“PART 5—PEAK DEMAND REDUCTION

“Sec. 571. Definitions.

“Sec. 572. Federal Electricity Peak Demand Reduction Standard.

“Sec. 573. National action plan for demand response.

“Sec. 574. Study of environmental attributes and impacts of demand response
and smart grid systems.”.